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MICROTEACHING AS A TEACHING METHODOLOGY.
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VARIOUS RESEARCH ON MICROTEACHING IS BRIEFLY REVIEWED. THE METHOD DEVELOPED AT STANFORD CONSISTS OF THE PRESENTATION OF 5-10 MINUTE VIDEOTAPED LESSON SEGMENTS TO GROUPS OF 4 TO 6 PUPILS. THESE LESSONS WERE EVALUATED BY THE SUPERVISOR AND THE PUPILS AND THEN DISCUSSED BY THE INTERN AND THE SUPERVISOR DURING THE PLAYBACK. THE LESSON WAS IMMEDIATELY RETAUGHT WITH A COMPARABLE GROUP OF PUPILS. A CRITICAL ANALYSIS FOLLOWED THIS VIDEOTAPING, USING THE SAME PROCEDURES. NO SIGNIFICANT DIFFERENCES IN JUDGED TEACHER COMPETENCE WERE FOUND BETWEEN RANDOMLY SELECTED INTERN TEACHERS WITH SUMMER STUDENT TEACHING EXPERIENCE AND THOSE WITH MICROTEACHING AT STANFORD. SEVERAL TEACHING SKILLS HAVE COME FROM THE MICROTEACHING PROJECT (1) ESTABLISHING SET, (2) ESTABLISHING APPROPRIATE FRAMES OF REFERENCE, AND (3) ACHIEVING CLOSURE. ANOTHER STUDY TESTED THE EFFECTS OF SELF-FEEDBACK AND REINFORCEMENT ON THE ACQUISITION OF A TEACHING SKILL AND FOUND THAT SELF-FEEDBACK WAS RELATIVELY INEFFECTIVE AS COMPARED WITH THE POINTING OUT OF SALIENT CUES IN TEACHING TO WHICH REINFORCEMENT SHOULD BE ATTACHED, COMBINED WITH THE SUPERVISOR'S POSITIVE REINFORCEMENT DURING THE PLAYBACKS. A FINAL STUDY DEMONSTRATED THAT SHOWING A STUDENT WHAT TO DO WAS MORE EFFECTIVE THAN TELLING HIM. THIS PAPER WAS PRESENTED AT CONFERENCE ON "INSTRUCTIONAL METHODS AND TEACHER BEHAVIOR" (BERKELEY, NOV. 21-22, 1966). (LC)

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# MICROTEACHING AS A TEACHING METHODOLOGY

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The Development of the video tape recorder has added a major new dimension to the methodology of teaching. Now, for the first time, we can see immediately how we have performed in teaching. We cannot only see results at once but can practice a given skill over and over in the microteaching studio until we are ready to try it in the classroom. We can view tapes or films of master teachers--or, at times, of teachers comparable and just a little better than ourselves and then practice this skill in both microteaching and actual classroom teaching sessions. (With training, we can use interaction analysis or the OScAR technique as we view. With appropriate evaluative instruments and training, we can analyze and evaluate our own teaching performance or that of others.)

The video tape recorder has been in commercial use only since 1956. Its portable versions came just a few years later. Prices for the portable versions have dropped from $20,000 plus to $14,000 to $10,000 to $3,500 and below. A home video tape recorder, not recommended for educational use, can be purchased for less than $2,000, complete with camera and playback equipment. Not only have prices dropped but quality and utility have increased. It is certain that scores even hundreds of portable video tape recorders will be purchased for school use in the next few years. How can they be put to their most effective uses in the schools? Or should the effectiveness criteria be put aside for a period of experimentation in each school so that perhaps totally unexpected instructional uses of the PVTR are discovered and tried? We could do both, of course, as some studies of classroom and instructional use of video tape recorders have provided data that should not be ignored by new users.

Perhaps I should describe what I mean by a video tape recorder. It is an electronic system whereby a television camera receives both visual and auditory images which are transmitted to the recording system, a system which retains images and sounds on tape much as an audio tape recorder retains sounds. Tapes vary from 1/2 inch to 2 inches in width and record from one half to two hours or more on each one. The video tapes can be erased as easily as audio tapes; an important safeguard to keep us from saving mediocre examples in our files forever. Electronic editing is possible with some systems which can mean a great deal in the preparation of demonstration and ETV tapes. The tape recorder can play back on its own usually small monitor, through any standard television set nearby or through television studio channels if the tape is compatible with the last or if it can be dubbed. It is possible to dub (i.e., tape from one tape to another) from a one-inch to a two-inch tape if the systems are at all compatible. Regular 16mm films can be made from most video tapes; a considerable advantage for dissemination purposes. Color and studio quality video tapes are on the educational-use

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horizons already. Portability of the tape recorder varies from difficult-to-move to backpack models which weigh 35 pounds and retail at $10,000. A model that can be moved easily by one man, through standard doorways, and up flights of stairs with no loss of recording or playback systems should be sought.

The history of use of video tape recorders in instruction is a brief one. References in the educational literature (Ed. Index) begin in 1959; appropriately enough an early reference appears in School Coach. Scattered research studies gradually appear.

One major study of secondary intern teacher preparation at Stanford University led to experimentation with audio taping and filming of the classroom teaching of the interns for playback at seminars on the campus. This system was far from perfect in feedback (problems in lighting and pickup of pupils' voices primarily) and the transition to video tape recorders--portable ones--was not long in coming. Having a large foundation grant and operating in the heart of the U.S. electronics industries, it was not long before several two-inch PVTR's were obtained for use with the secondary intern program at Stanford. The Stanford project staff, headed by Drs. Dwight Allen and Robert Bush, developed the procedure of presentation of short, videotaped lessons or lesson segments (from 5 to 10 minutes) to small groups of from four to six pupils. These lessons were evaluated by both the supervisor and the pupils and were discussed by the intern candidate and the supervisor during the playback and critiquing period immediately following. Recommendations for one change of behavior was made for reteaching, which again followed immediately with a comparable small group of pupils. Critiquing again followed this videotaping, using the same procedures. The name micro-teaching was given to this process, a process that is being further refined and studied at Stanford University's School of Education and elsewhere.[1] Micro-teaching offers the considerable advantages of immediate knowledge of results and opportunity to practice a given skill at once and until satisfactory performance is obtained and without disservice to classroom groups.

Most of the research findings from experimental use of microteaching have come from studies in Stanford's Secondary Teacher Education Program and at the Stanford Center for Research and Development in Teaching. A few other studies are now underway on other campuses. It is probable that scores of studies will emerge in the next year or two.

A first major finding in the Stanford Program was that there were no significant differences in judged teacher competence between randomly-selected secondary intern teaching candidates (n=30) who had had summer student teaching and those who had participated in the micro-teaching program on campus.[2] Pre- and post-tests, on video tape, were judged, double-blind,

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1. Secondary Teacher Education Program. Micro-Teaching: A Description. Stanford: School of Education, Stanford University, Summer 1966.
2. Dwight W. Allen and James C. Fortune. An Analysis of Micro-Teaching: A New Procedure in Teacher Education. Stanford: School of Education, Stanford University, c. 1964.

by highly-trained evaluators. The tests consisted of short lessons presented by each intern in the study. These findings from the summer program carried over into the regular teaching year; success levels being judged with the same evaluation instrument, the Stanford Teacher Competence Appraisal Guide, which had been demonstrated to be a highly reliable instrument when used by trained observers.[3]

Validity of the instrument was judged on the basis of the adequacy of its sampling of the major teaching skill areas utilized by the Stanford STEP Staff.

An immediate consequence of the Stanford Intern Program findings was to drop the logistically-difficult summer student teaching and school aide programs in favor of an on-campus micro-teaching program for all such interns. The design of this particular study is being utilized in a two-year study at San Jose State College as applied to elementary intern teachers. Findings in the first year of the San Jose study are similar to the Stanford findings, viz., no significant differences between the control and experimental groups as judged from observations of their pre- and post-test videotapes by highly-trained observers.[4] A similar study is underway for 1966-1967 and includes a field follow-up using both STCAG and IOTA,[5] - a more comprehensive teacher competence evaluation instrument.

One advantage of microteaching is that it provides "An opportunity for those who are preparing to teach to obtain a liberal amount of practice immediately upon their entrance into training, under optimum conditions for the trainees and without endangering the learning of pupils."[6]

It "Aims to break down teaching into simpler components so that the learning task will be more manageable for the beginner."[7]

The trainee focuses upon a certain aspect of teaching until he has developed a satisfactory minimum of skill before he proceeds to another skill. In each session, he views his performance on video tape, receives a critique of it and of pupil evaluations, immediately reteaches the same lesson to another small group of students with one recommended change and can repeat until successful.

Several teaching skills have derived from the project and while these do not represent even a major part of a theory of teaching they at least bring some order to a rather nebulous area.

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3. Ibid.
4. Warren Kallenbach and Robert Tamonda. "The Effectiveness of Microteaching in the Preparation of Elementary Intern Teachers." Unpublished mimeographed paper, San Jose State College, 1966.
5. Instrument for the Observation of Teaching Activities (IOTA). Copyright 1960, 1964 by Bradley, Kallenbach, Kinney, Owen, and Washington.
6. Robert N. Bush and Dwight W. Allen. Micro-Teaching: Controlled Practice in the Training of Teachers. Stanford: School of Education, Stanford University, 1964.
7. Ibid.

Some of the skills stressed for teaching in the Stanford Program are:

1. Establishing Set - The establishment of cognitive rapport between pupils and teacher to obtain immediate involvement in the lesson.

2. Establishing Appropriate Frames of Reference - Organizing and teaching from several appropriate points of view.

3. Achieving Closure - Attained when the major purposes, principles, and constructs of a lesson, or portion of a lesson, are judged to have been learned so that a pupil can relate new knowledge to past knowledge.

Five or six other skills have also been isolated.

Recently three important studies have been conducted using micro-teaching as a basis.

One study[8], tested the effects of self-feedback and reinforcement on the acquisition of a teaching skill, viz., the teacher's use of positive reinforcement for pupil responses in classroom discussion. It was demonstrated that self-viewing (self feedback) by the intern was relatively ineffective (no significant changes in frequency of pupils' responses during discussions) as measured in this study. The most effective training method existed when cue discrimination (pointing out of salient cues in teaching to which reinforcement should be attached) was added to the positive reinforcement given by the intern teacher's supervisor during the viewing of the video tape playbacks.

Another study[9] tested the effects of feedback and practice conditions on the acquisition of a teaching strategy, viz., asking questions of pupils designed to elicit more information or more meaning for the pupil, this process being called probing. (Probing being broken down into clarification, critical awareness, redirection, prompting, and refocusing.) The effects of immediate feedback--massed practice; immediate feedback--distributed practice were tested. Outcomes favored mass practice--immediate feedback over distributed practice--reinstated feedback.

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8. Frederick J. McDonald, et al. The Effects of Self-Feedback and Reinforcement on the Acquisition of a Teaching Skill. Unpublished manuscript, Stanford University School of Education, Stanford, 1966.
9. Dwight W. Allen, et al. Effects of Feedback and Practice Conditions on the Acquisition of a Teaching Strategy. Unpublished manuscript, Stanford University of Education, 1966.

The final study in this series[10] tested the effects of modeling and feedback variables on the acquisition by secondary intern candidates of a complex teaching skill - probing (used where questioning goes beyond first-answer pupil responses).

In general, the experiment sought to determine which would be more efficient: telling the person what to do (called symbolic modeling) or showing him what to do (called perceptual modeling) or some combination of these that includes reinforcement and further discrimination training on the relevant cues.

Six groups were randomly selected and different treatments were applied to each.

Combinations of minimal and maximal symbolic and perceptual modeling were applied. Group six represented a combination of combined symbolic and maximal perceptual modeling and was determined to be the optimal training condition in achieving a favorable balance in use of probing techniques. It was clearly demonstrated that perceptual modeling excels over symbolic modeling.

Even though self-viewing by intern teachers has not proved effective or as successful as some other modes in teaching, this may not be the case with experienced teachers. It may be quite worthwhile to test the use of the PVTR in the classrooms of experienced teachers in which they alone view the tapes and they alone decide what changes they wish to make in their teaching.

This last approach was the basis of a study at San Jose State College: one called "Strategies in College Teaching", so as not to offend the sensitivities or alarm the professors involved. Pre and post tapes of beginning psychology classes were made of five instructors all of whom who presented the same concepts for the taping. No significant differences were found between the tapes as judged by the same professors viewing each of the other four professor's pre and post tapes on a better or less effective basis. This finding may be explained in that a total 50-minute class session was taped and, in some cases, the repeat taping brought out such attempts to improve everything at once or such anxieties that quality actually went down upon the second performance. In the San Jose State College intern studies we find that three or more microteaching sessions are necessary to overcome the first-time-on-television effect, --which we call the "cosmetic effect." Also in our microteaching projects we have learned to keep teaching sessions very short at first and to concentrate on one teaching skill at a time, although this latter is very difficult for any supervisor of student or intern teachers at whom we formerly threw whole barrages of "goods" and "let's improve's."

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10. Michael E. J. Orme. The Effects of Modeling and Feedback Variables on the Acquisition of a Complex Teaching Strategy. Unpublished manuscript, Stanford University School of Education, 1966.

The uses of the PVTR seem limited only by our imaginations and finances. We could tape school board meetings for civics classes: tape kindergarten class performances to be played back to the PTA Meeting: tape You-Name-It for whatever.

I prefer to concentrate on the improvement of teacher competence through microteaching even if I have to practice via microteaching myself.